

REMARKS

The Applicants request reconsideration of the rejection.

Claims 1-13 and 19-22 are now pending, including new claims 19-22.

Claims 1-4, 7-8 and 10-13 stand rejected under 35 U.S.C. §102(b) as being anticipated by Burd Mehta et al., PCT WO 00/50172 (Burd Mehta). The Applicants traverse as follows.

Independent claims 1 and 10 have been amended to more particularly distinguish the claims from Burd Mehta. In particular, claims 1 and 10 now recite that the plurality of magnetic members disposed outside of the vessel apply a magnetic field to each of the magnetic micro-particles held by the vessel, and switch the application of the magnetic fields to move the magnetic micro-particles within the vessel. The Applicants refer the Examiner, for example, to page 11, line 7 – page 12, line 6 of the present specification, with reference to Figs. 4A – 4G.

As disclosed, this embodiment of the invention includes two or more magnetic micro-particles 402, 403, etc., which are provided in vessel 401 and held by the application of a magnetic field as indicated by “ON” in the figures. By providing plural magnetic members 405, 406, etc. corresponding to each of the magnetic micro-particles 402, 403, etc., and appropriately switching the magnetic members 405, 406, etc., the magnetic micro-particles 402, 403, etc. are moved within the vessel.

Regarding claims 1 and 10, although Burd Mehta appears to disclose the manipulation of micro-particles in microfluidic systems, and although the passage noted by the Examiner (page 22, line 29 – page 23, line 10, and in particular page 23, lines 5-10) appears to indicate that particles may be fixed in a particle retention region by a magnetic field proximal to or within the particle retention region,

there is no further disclosure as to the way in which particles may be fixed by such a magnetic field. More specifically, there appears to be no disclosure that a plurality of magnetic members disposed outside of the vessel, for magnetically controlling a relative position of magnetic micro-particles held by the vessel, apply a magnetic field to each of the magnetic micro-particles and switch the application of the magnetic fields to move the magnetic micro-particles within the vessel, as required by amended claims 1 and 10.

In this regard, dependent claim 3 requires that at least one of the magnetic micro-particles have a probe unmobilized to a surface thereof. Against this claim, the Office Action cites Burd Mehta at page 31, lines 7-19 and Fig. 14. However, this disclosure generally describes fixing a first particle set (which is, e.g., a magnetic particle) to act as a retention element to block flow of subsequent particle sets. There is no disclosure that the magnetic particle has a probe immobilized to a surface thereof.

Regarding amended claim 7, the amended claim describes that at least one of the magnetic micro-particles or non-magnetic micro-particles is taken out from an opening end of a branched channel different from the branched channel in which the at least one particle is included. The amended claim requires that the taking out is performed by the switching of the magnetic fields moving the magnetic micro-particles. Burd Mehta fails to disclose or fairly suggest this feature of the invention. Indeed, the Office Action cites the fluidic transfer against this claim, different from the now-claimed magnetic field-switching transfer.

Dependent claim 8 has been amended to require the transport mechanism to collect one of the magnetic micro-particles or non-magnetic micro-particles from an opening end of the vessel to which the collected particle is moved by the switching of

the magnetic fields. Thus, claim 8 is patentable for reasons similar to that argued above with respect to claim 7.

Claim 12 can be similarly distinguished, the Applicants noting that the Office Action appears to overlook this claim in rejecting claims 10-13 in bulk.

For each of the foregoing reasons, the Applicants respectfully submit that claims 1-4, 7-8 and 10-13 are patentably distinguishable over Burd Mehta.

Claims 1-2, 4-5, 8, 10-11 and 13 stand rejected under 35 U.S.C. §102(b) as being anticipated by Hauser et al., PCT WO 99/60170 (Hauser). The Applicants again traverse, noting that although Hauser teaches to "oscillate" a magnetic field applied to a linear array of beads including magnetic beads, by moving a hand magnet back and forth along the axis of the linear array, Hauser does not disclose to switch the application of the magnetic field to move the particles. Further, Hauser does not teach that a plurality of magnetic members disposed outside of the vessel magnetically control the relative positions of the magnetic micro-particles within the vessel, wherein the plurality of magnetic members apply a magnetic field to each of the magnetic micro-particles and switch the application thereof to move the magnetic micro-particles as argued above. Therefore, amended claims 1 and 10 are believed to be patentably distinguishable from Hauser.

The dependent claims may be distinguished similarly to the arguments above respecting Burd Mehta. In addition, like Burd Mehta, Hauser never discloses to remove the particles as set forth in the claims, and in particular, does not disclose to remove the particles by the switching of the applied magnetic fields as set forth in the amended claims. Therefore, claims 2, 4-5, 8, 11 and 13 are also patentable over Hauser.

Claims 1 and 5-6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Burd Mehta in view of Southgate et al., U.S. Patent No. 5,863,502 (Southgate). While Southgate appears to disclose to lock beads in place by using a magnet generating a magnetic field gradient within a reaction chamber, however, Southgate does not disclose to move the beads using the magnetic field. More specifically, Southgate does not disclose a plurality of magnetic members disposed outside of the vessel holding magnetic micro-particles, wherein the plurality of magnetic members apply a magnetic field to each of the magnetic micro-particles, and switch the application of the magnetic fields to move the magnetic micro-particles within the vessel. Further, Southgate does not disclose to take out the magnetic micro-particles in accordance with the switching of the magnetic fields. Accordingly, even in any motivated combination with Burd Mehta, Southgate does not render obvious the invention set forth in claims 1 and 5-6.

Claims 1 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Burd Mehta in view of Harrison et al., U.S. Patent No. 6,432,290 (Harrison). Harrison is applied as teaching a vessel comprising channels and a transport mechanism for collecting micro-particles from an open end of the vessel. However, Harrison does not include structure or function corresponding to the claimed magnetic micro-particles and magnetic members that move the magnetic micro-particles within the vessel holding them by switching the application of magnetic fields to the magnetic micro-particles, as set forth in the claims and argued above. Therefore, in any motivated combination with Burd Mehta, Harrison is not believed to render obvious claims 1 and 9.


New claims 19-22 are dependent claims that positively recite the plurality of non-magnetic micro-particles held by the vessel (claims 19-20) and a collecting vessel collecting one of the magnetic micro-particles (claims 21-22). Particularly in combination with the limitations of the respective independent claims, these claims thus recite patentable subject matter.

Although each of the applied references has been distinguished with regard to its individual teachings as applied in the Office Action, the Applicants submit that, even in combination with any of the other references of record, the applied references must fail in any attempt to reject the claims because they fail to provide the teachings argued above. Therefore, the Applicants respectfully request reconsideration of the rejections and allowance of the claims.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger & Malur, P.C., Deposit Account No. 50-1417 (referencing attorney docket no. H&A-126).

Respectfully submitted,

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